

UCSD Team Offers New Surgical Treatment For Severe Depression

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Major depressive disorder is a very common illness, affecting nearly 18 million Americans and 340 million people worldwide. Treatment-resistant depression is a severe form of the illness that affects 20% of patients with depression.

A team of psychiatrists and neurosurgeons at the University of California, San Diego (UCSD) Medical Center is the first in the area to offer implantation of a device recently approved by the Food and Drug Administration (FDA) for treating patients with treatment-resistant depression.

Called Vagus Nerve Stimulation (VNS), the therapy is delivered from a pacemaker-like generator implanted in the chest that sends mild and intermittent electrical pulses through the vagus nerve in the neck to the brain. The vagus nerve, one of the 12 cranial nerves, serves as the body's "information highway" connecting the brain to many major organs. Several studies have shown that VNS therapy may modulate neurotransmitters such as serotonin and norepinephrine thought to be involved in mood regulation.

The VNS device itself is very small - perhaps 2 inches in diameter - and, at one ounce, is about the size of a wafer cookie. It is attached to two very thin leads, which are threaded under the skin and connected to the vagus nerve in an hour-long outpatient surgical procedure.

The treatment was approved by the FDA in July of this year as "an adjunctive long-term treatment for chronic or recurrent depression in patients 18 years of age and older who are experiencing a major depressive episode that has not responded adequately to four or more antidepressant treatments."

Patients referred by their physicians to the UCSD Medical Center for the surgery are carefully evaluated by a team consisting of the neurosurgeon and psychiatrists, to determine that the patient is an appropriate candidate for VNS therapy. Mounir Soliman, M.D., Assistant Clinical Professor of Psychiatry, Clinical Service Chief and Medical Director for UCSD's Psychopharmacology Research Initiatives Center of Excellence (PRICE) is leader of the VNS research and clinical team at UCSD. UCSD Medical Center is one of two initial California sites, along with Stanford University, identified by VNS manufacturer Cyberonics as a Center of Excellence for treatment and training with VNS Therapy.

The UCSD team also includes neurosurgeon Robert J. Buchanan, M.D., Assistant Professor of Surgery/Neurosurgery, Psychiatry and Radiology; Shannon Chavez, M.D., Assistant Clinical Professor and Medical Director of UCSD Outpatient Psychiatry Services, and David Feifel, M.D., Ph.D., Associate Professor and Director of UCSD's Neuropsychiatry and Behavioral Medicine Unit.

The device is monitored much like an oral drug, with varied dosage of the electric stimulation called "neuro-modulation." The device sends precisely timed and measured mild pulses to the vagus nerve 24 hours a day. The psychiatrist is in charge of the programming of the device, turning it on and off, and providing more or less energy to the nerve. The patient is also given regular psychiatric evaluations by members of the team. Improvement, when it occurs, is usually seen after a few months.

"Some studies have shown that improvement of depressive symptoms with VNS is delayed but sustainable," said Soliman. He also commented that clinical trials so far have suggested that the longer VNS was used by a patient, the better the results.

The device was approved by the FDA in 1997 as an adjunctive therapy for epilepsy. "Its use in treating depression was discovered almost by accident," said Buchanan, who has performed about 100 of the surgeries.

"About 30 to 40 percent of patients with epilepsy have other neurological or psychiatric disorders, one of them being major depressive disorder. It was found that, in epilepsy patients who underwent the VNS surgery - even if their epilepsy was not cured - their depression lifted," he said. This led researchers to pursue the surgery for patients with treatment-resistant depression. UCSD's Department of Psychiatry was a site of clinical trials of VNS for depression prior to FDA approval.

"So far the results of studies of VNS in treatment-resistant depression are promising, and we are committed to studying its use and defining the efficacy of this innovative therapy," said Solimon.

For more information, patients and physicians should call UCSD's Department of Psychiatry at 858-622-6170.

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